

Parameter	Value	Units	Quality	Notes
Cryostat Pit				
Insulation thickness	1	m	**	No detailed design yet. Set by the heat loss coefficient
Insulation heat loss coefficient	5.0	W/m^2	**	The insulation design goal
Concrete pit thickness	0.5	m	***	
Pit Width	19.0	m		
Pit Depth	18.5	m		
Pit Length	77.0	m		
Pit Volume	27066	m^3		
Pit Surface Area	6478	m^2		
Insulation heat loss	32	kW		
Electronics				
Mux level	128		***	
Analog front end power	10		**	Design goal
Digital front end power	5		*	Needs to be defined
Power conversion efficiency	100%		*	Needs to be defined
Electronics power dissipation	15	mW/chan	**	
Electronics power total	9.7	kW		
ENC	743	electrons		Paul Rubinov parameterization. Ref BNL docdb 626
Ionization (1 MIP after recombination)	3	fC		
Electron drift velocity	1.6	mm/micro-sec	***	
Electron drift time	1.54	ms		
Electron lifetime assumption	1.4	ms	**	Set to achieve minimum S/N = 8
Equivalent O2 contamination	214	ppt		
Signal to noise ratio max	25			
Signal to noise ratio min	8			
Sampling rate	2	MHz		
High Voltage				
Drift field	500	V/cm	***	
Cathode high voltage	123	kV		
Grid bias voltage	-480	V	**	Adjust to achieve transparency
U plane bias voltage	-280	V	**	Adjust to achieve transparency
V plane bias voltage	0	V	**	Adjust to achieve transparency
Collection plane bias voltage	700	V	**	Adjust to collect electrons
Cryogenics				
Num recirculation pumps	4		*	Provides redundancy during operation. None during initial purification
Recirculation pump flowrate	47,000	kg/hr	**	Set to achieve LAr volume turnover similar to ICARUS
	34	m^3/hr		
	150	gpm		
Recirculation pump flowrate - max	188,000	kg/hr		
	136	m^3/hr		
	598	gpm		
LAr volume turnover @ max flowrate	5	days		
Pump power	6	kW	**	Assumes 30m (60 psi) head pressure
Pump power - max	24	kW	**	Assumes 30m (60 psi) head pressure
Refrigeration load	48	kW		
Refrigeration load - max	66	kW		
Refrigeration plant capacity	50	kW	**	From Arup concept report
Refrigeration plant margin	4%			
Refrigeration power	560	kW	**	From Arup concept report
Refrigerator output	140	kW	**	From Arup concept report
LN2 storage dewar	100	m^3	**	From Arup concept report
LN2 storage dewar backup capacity	3	days	**	From Arup concept report
Detector Depth				
Detector Depth	800	ft	*	
	240	m		
Cosmic ray rate	0.06	Hz/m^2		
Cosmic ray rate - detector top	64	Hz		
Cosmic ray rate - APA top	0.7	Hz		